What is claimed is:

1. A microengineered stacked ring ion guide, comprising a first and second substrate, each of the first and second substrates having at least first and second features defined thereon, the features being configured such that when the first and second substrates are brought together the features on opposing substrates combine to form complete diaphragm electrodes containing closed pupils.

2. The ion guide of claim **1** wherein each of the features are upstanding from and proud of the substrate.

3. The ion guide of claim **1** wherein at least some of the features have grooves formed in an upper surface thereof.

4. The ion guide of claim **3** wherein each of the features have grooves, the grooves being configured to form a closed pupil on the bringing together of opposing substrates.

5. The ion guide of claim **1** wherein the closed pupil formed in a first diaphragm electrode is co-linear with a closed pupil in a second adjacent diaphragm electrode.

6. The ion guide of claim **1** wherein the closed pupil formed in a first diaphragm electrode is offset from a closed pupil in a second adjacent diaphragm electrode.

7. The ion guide of claim **1** wherein each of the closed pupils in adjacent diaphragm electrodes cooperate to form an ion path through the ion guide.

8. The ion guide of claim **1** wherein neighboring electrodes are coupled to a voltage supply of an opposing polarity to that of their neighbor.

9. The ion guide of claim **1**, in which alternate electrodes are connected together in two sets by two additional features forming two bus bars.

10. The ion guide of claim **1** being configured to effect a transportation of ions.

11. The ion guide of claim **1** being configured to effect a concentration of ions.

12. The ion guide of claim **1** being configured to effect a fragmentation of ions.

13. The ion guide of claim **1** being configured to be operable with a mass filter.

14. The ion guide of claim **13** wherein the mass filter includes a quadrupole.

15. The ion guide of claim **1** being configured to be operable in a vacuum interface.

16. The ion guide of claim **1** being configured to be operable in a collision cell.

17. The ion guide of claim **1** being configured such that alternate electrodes are connectable to different AC voltages.

18. The ion guide of claims **1** being configured such that alternate electrodes are connectable to different DC voltages.

19. The ion guide of claim **1** being configured such that the electrodes are independently driven.

20. The ion guide of claim **1** wherein each of the closed pupils are substantially identical.

21. The ion guide of claim **1** in which the width of each of the closed pupils varies from electrode to electrode.

22. The ion guide of claim **1** being operable as an ion funnel.

23. The ion guide of claim **1** being configured to form an ion storage ring.

24. The ion guide of claim **1** wherein the closed pupil widths are defined by lithography.

25. The ion guide of claim **1** wherein the closed pupils are formed by an etching process.

26. The ion guide of claim **1** wherein the closed pupils are formed by powder blasting.

27. The ion guide of claim **1** wherein the features are defined by lithography and etching.

28. The ion guide of claim **1** wherein the features are formed in a metal, semiconductor, a metallized semiconductor.

29. The ion guide of claim **28**, in which the semiconductor is silicon.

30. The ion guide of claim **1** in which the substrates are formed in an insulator.

31. The ion guide of claim **30**, in which the insulator is a glass, a plastic or a ceramic.

32. The ion guide of claim **1** including a unique identifier.

33. A set of ion guides, each of the set of ion guides comprising a first and second substrate, each of the first and second substrates having at least first and second features defined thereon, the features being configured such that when the first and second substrates are brought together the features on opposing substrates combine to form complete diaphragm electrodes containing closed pupils, the set being arranged as a parallel array.

34. A method of forming a stacked ring electrode assembly capable of acting as either RF or DC ion guides in an ion optical system, the method including:

processing sets of grooved, proud features in a layer of material lying on an insulating substrate, and

bringing together in a stack arrangement two such substrates to form a set of diaphragm electrodes with closed pupils.

35. A mass analysis device including a mass filter and an ion guide, the ion guide comprising a first and second substrate, each of the first and second substrates having at least first and second features defined thereon, the features being configured such that when the first and second substrates are brought together the features on opposing substrates combine to form complete diaphragm electrodes containing closed pupils.

36. The device of claim **35** wherein the mass filter includes a quadrupole.

37. The device of claim **35** wherein the ion guide and mass filter are fabricated on a common substrate.

38. The device of claim **37** wherein the ion guide and mass filter are aligned such that ions emitted from the ion guide may travel into the mass filter.

39. The device of claim **35** wherein the mass filter is fabricated in two halves that are assembled by stacking.

40. The device of claim **39** wherein the stacking of the two halves provides pairs of etched, metallized features that provide mechanical mounts for and electrical connections to a plurality of rods.

41. The device of claim **40** wherein the mass filter is fabricated by stacking each of the halves and subsequently inserting rods onto the mechanical mounts, the rods on insertion straddling an etched, metallized trench formed in a raised feature.

42. A microengineered ion guide, fabricated from a first and a second substrate, each of the first and second substrates having compatible structures such that when the first and second substrates are brought together to form a sandwich structure the compatible structures mate with one another to form a set of electrode rings.